DOCUMENT RESUME

ED 221 828 CS 006 815

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TITLE When Consistency Fails: Limiting Reconstructive Errors in Memory.
PUB DATE Apr 82
NOTE 12p.; Paper presented at the Annual Meeting of the Eastern Psychological Association (53rd, Baltimore, MD, April 14-17, 1982).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Processes; Error Patterns; Higher Education; Memory; Psychological Patterns; *Reading Research; *Recall (Psychology); Research Methodology; *Social Psychology
IDENTIFIERS *Reconstructive Memory

ABSTRACT

A study was conducted to explore the generality of reconstructive processes of memory for social information. Sixty college students divided evenly into six experimental and control groups were asked to read one of two versions of a story: one in which a couple happily agreed not to have children, the other in which the man's desire to remain childless greatly upset the woman. Those in the experimental groups were then asked to write their impressions of the story. Subjects who had read about the disagreeing couple were then told they had gotten married, and those who read about the agreeing couple were told they had split up. Those in the control groups either received the biasing information before writing their impressions or did not write any impressions. At the second session, either 2 days or 2 weeks later, subjects were asked to recall the story they had read during the first session and to avoid adding their own impressions or thoughts to the account. The primary dependent measure was the number of reorganizing errors in the subjects' recall. Subjects who were tested after 2 days were more accurate in their overall recall than those tested after 2 weeks. There were no other differences in overall recall between groups. Contrary to prediction, those who learned the marriage outcome before writing their impressions did not commit a greater number of reorganizing errors than those who wrote no impression. They did, however, commit more errors than those who wrote an impression before receiving the biasing information, although the effect was only marginal. (HTH)

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When Consistency Fails: Limiting Reconstructive Errors in Memory[1]

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Abstract. An experiment explored the generality of reconstructive processes in memory for social information. As predicted, subjects who had written first impressions of two stimulus persons before being presented with an inconsistent fact did not reconstruct their prior knowledge. Instead, these subjects tended to commit errors that magnified the inconsistency by exaggerating elements of their prior knowledge. Results are discussed in terms of Spiro's (1980) accomodative reconstruction hypothesis.

In the course of acquiring social information, individuals frequently encounter facts that are inconsistent with one another. A technique used to investigate the management of this type of inconsistency is to present subjects with information that is inconsistent with their prior knowledge about an event or person, and then, after a delay interval, to test memory for the initial information. The biasing impact of the inconsistency is assessed by the extent to which prior knowledge is remembered to be consistent with subsequently acquired facts.

In one such study, done by Spiro (1980), subjects read an account of a couple engaged to be married who either agreed or disagreed about not wanting to have children. When subjects were told that the disagreeing couple got married, or that the

[1]This manuscript was prepared for presentation at a meeting of the Eastern Psychological Association in Baltimore, Maryland, April, 1982.

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agreeing couple did not, they tended to recall facts that made these inconsistent series of events more coherent if tested at least three weeks after learning about the couple. These facts, or "reorganizing" errors, took the form of distortions of, and additions to the original text. For example, in the case of the story about the agreeing couple who did not get married, subjects added a source of disagreement to their recalls, and some even remembered the couple disagreeing about children.

In terms of a process that could produce these errors, Spiro suggested that to the extent that memory for the initial information is weakened (as it might become over time), individuals use their world knowledge at retrieval to help them make sense out of what they know. We agreed with this explanation, but wondered if the tendency to reorganize might be affected by processing conditions at the time of acquisition. Specifically, we thought that the act of forming an impression prior to the receipt of inconsistent information might attenuate the biasing effects of the inconsistency. Our reasoning was guided by statements like those offered by Nisbett and Ross (1980) and Wyer and Srull (1980), who mention the addition of explanations and inferences to the initial knowledge base as a consequence of forming an impression.

Therefore, an impression formed in the absence of inconsistent information is likely to include elements that make the original facts more consistent with each other. At time of retrieval, this supporting information should make the initial

information more resistant to reorganizing inferences. On the other hand, forming an impression immediately after learning an inconsistent fact about a person should result in the addition of explanatory inferences to what is known about him or her -- with these inconsistency-reducing explanations, then, more likely to be retrieved with the facts. To the extent that memory for the original information is reduced, these inferences are also more likely to be less distinguishable from the facts, thus increasing the probability of reorganization at retrieval.

To test these hypotheses, we conducted a modified version of Spiro's experiment, asking some subjects to write a first impression either before or after receiving biasing information; in addition, some subjects did not write their impressions. Subjects were given a recall test either two days or two weeks after the first session, so that the design of the study was a 2 X 3: Delay (2 days or 2 weeks) X Time of Impression (None, Bias Before, or Bias After). Reorganizing errors were predicted to occur more frequently when subjects received the inconsistency bias before writing their impression than when they wrote no impression, and both of these groups were expected to commit more reorganizing errors than those who got the bias after writing their impression. Since reorganizing effects do not generally occur soon after acquisition, these predictions were made only for subjects tested after a 2 week delay interval.

Method

Subjects. A total of 60 male and female undergraduates at a small New England college were paid $3.50 for their participation in the two twenty-minute sessions. Ten subjects were randomly assigned to each of the six experimental conditions.

Procedure. With the exception of the Impression manipulation, an attempt was made to follow Spiro's procedures as closely as possible. The experiment itself involved two sessions. During the first, subjects read a short text and were led to believe that they would be asked about their reactions to the people in the story either two days or two weeks later. The text was adapted from Spiro's account of a young couple who fall in love and become engaged. As in Spiro's study, two versions of the story were constructed. They were identical except for the information provided in the last paragraph. In one version, the couple happily agreed about not wanting to have children, while in the other, the male's desire to remain childless greatly upset the woman, who wanted to become a mother. Since no effects due to the type of story were found, this was not treated as a factor in the following analyses.

After subjects had been allowed 4 minutes to read the text, the experimenter introduced the biasing information by casually mentioning what had happened to the couple. Subjects who read about the disagreeing couple were told that they got married, whereas those who read about the agreeing couple were told that they split up. For subjects who did not write an impression or

who wrote their impressions without knowing the marriage information, the bias was delivered while they handed in their booklets. Subjects who wrote their impressions after learning about the marriage outcome received this information after they read the story.

The impression measure was collected by appending to each story booklet a page that requested subjects to take 5 minutes to write down their first impression of the couple. Subjects were instructed to not turn to this page until told to do so, so that no subject read the story with an expectation of immediately being asked to write something about it.

Subjects, who were run in groups of up to 10, were randomly assigned to a delay condition by an ID number that appeared on the cover sheet of their story booklet. This was necessary in order to keep the experimenter blind to one of the factors, since it was not possible to remain unaware of the type of impression that would be manipulated. Subjects left the first session expecting to give their reactions at the second, and were asked to refrain from discussing these reactions with anyone.

Upon returning for the second session, subjects were told that the experiment involved memory and were asked to recall the story they read during the first session. Recall of all elements that came to mind was encouraged. They were explicitly instructed to avoid adding their impressions or thoughts to these accounts. In addition, they were asked to indicate their confidence in each fact recalled using a 1-7 scale.

Results

The primary dependent measure was the number of reorganizing errors in a subject's recall. For example, a subject who recalled a source of disagreement between the agreeing couple who did not get married was scored as having committed one error. Agreement between two judges on the scoring of these errors was 96%.

Subjects who were tested after two days were more accurate in their overall recall than those tested after a 2 week delay. There were no other differences in overall recall between the groups. In order to test our specific hypotheses, planned comparisons were performed on the average number of reorganizing errors. An inspection of the means in Table 1 reveals that, as predicted, reorganizing errors after a two week delay were less frequent among subjects who received the bias after writing their impressions than among subjects in the other two impression conditions, $t(19) = 3.94$, $p<.001$ (with t and degrees of freedom computed using Welch's (Kirk, 1968) correction for non-homogeneity of variance). Contrary to prediction, those who learned the marriage outcome before writing their impressions, did not commit a greater number of reorganizing errors than those who wrote no impression. They did, however, commit more than those who wrote an impression before the bias, although this effect was only marginally significant, $t(9) = 1.96$, $p<.08$ (corrected as above). Unlike those in Spiro's study, confidence ratings in the reorganizing errors were not greater than

confidence in correct responses, 5.8 vs. 6.0, respectively.

Table 1

Average number of reorganizing errors

		IMPRESSION		
		None	Bias Before	Bias After
DELAY	2 Days	0	.1	0
	2 Weeks	.6	.3	0

In the course of scoring the recall data it became apparent that some subjects were actually committing errors that intensified the discrepancy between the story and the outcome -- for example, by remembering the relationship between the agreeing couple who did not get married as even better than it was. These "magnifying" errors were made only by subjects who did not reorganize, and further, tended to occur more frequently in conditions where minimal reorganization occurred (see Table 2).

Table 2

Average number of magnifying errors

		IMPRESSION		
		None	Bias Before	Bias After
DELAY	2 Days	.3	.2	.6
	2 Weeks	.1	.2	.4

In fact the average number of magnifying errors committed by subjects who wrote their impressions without knowing the inconsistent information was greater then the average in all other groups, $t(58) = 2.47$, $p<.02$. As with the reorganizing errors, confidence ratings in the magnifying errors were not greater than those in correct responses, 5.9 vs. 6.4.

Discussion

What does all this mean? Spiro has argued that when people are encouraged to process social information in a naturalistic way that they reorganize the past to make it conform to the present. While providing some support for this claim, our experiment suggests that reorganization does not occur when knowledge is well-organized prior to the addition of inconsistent information. If there is a general tendency toward consistency, it is not too difficult to disrupt.

Our data also suggest (at least) two questions. First of all, why were those subjects who wrote an impression based on inconsistent information not more biased than those who did not write an impression? And second, why is inconsistency likely to be magnified when reorganization does not occur?

To answer both of these questions it is necessary to speculate, and to reexamine the process of impression formation itself. We were thinking that impression formation results in the addition of information that supports, or interconnects, what one knows at the time that the impression is made. But a

necessary component of this process is also the rehearsal of information relevant to the impression. A plausible consequence, then, is the improvement of memory for this information. More importantly, having this information available at test should oppose the tendency to make inference-based errors when one has less than perfect recall . The performance of subjects who wrote an impression after they learned inconsistent information clearly supports this hypothesis. On the other hand, subjects who wrote an impression before being biased committed more magnifying errors than anyone else. So, the question becomes: why weren't they more accurate too?

It may be that the strengthening of the initial story likely to result from their impressions made the biasing information seem even more surprising, or inconsistent, to these subjects, so that they were more likely than anyone else to remember the story and the outcome as "not making sense." At test, they may be more likely to remember both their surprise and their inferences, and despite a rehearsal advantage, exaggerate elements of the original information.

Now, to restate our position on the process that produces reorganization: we think that these errors are primarily inferences produced in order to make sense out of what one has available at retrieval, as proposed by Spiro. We would like to suggest, however, that having formed an impression at acquisition changes the contents available at retrieval by making some information more memorable, adding explanatory inferences, and

even adding memories for emotional reactions during acquisition. We simply contend that whether the final recall is more or less consistent with the original information must depend on the total pool of knowledge available.

Our data may have implications for situations in which individuals must make decisions about others, e.g. employment or educational settings. Fisrt, it would appear that forming an impression about another person makes one resistant to revising that impression subsequent to the receipt of more information (a primacy effect). On the other hand, waiting until all the facts are in before forming a concrete impression would seem to result in reinterpretation biased toward the most current facts (or a recency effect). Clearly, then, the consequences for a person about whom some decision is to be made depend jointly on when during the process of information acquisition the decision-maker forms his or her first impression and the order in which various facts are acquired.

Thus, the present research does not suggest a simple course of action for persons who must make decisions about others. We suspect that an awareness of both the difficulty of revising first impressions and the tendency to reconstruct the past when no initial impression has been formed would enhance the performance of one in such a decision-making role, but further research is needed to make more precise recommendations.

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Footnotes

The research reported in this paper was supported by a Dartmouth College Faculty Research Grant to the second author. Thanks are due to Gary Dell for his comments on statistical analyses.

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